

REMARKS

The Office Action mailed on September 9, 2002, has been received and reviewed.

Claims 1-23 are currently pending in the above-referenced application. Claims 1-3, 5, 6, 8, 10-15, 17-19, and 21-23 stand rejected. Claims 4, 7, 9, 16, and 20 have been objected to as being dependent upon rejected base claims, but the indication of allowable subject matter in such claims is noted with appreciation.

Reconsideration of the above-referenced application is respectfully requested.

Rejections Under 35 U.S.C. § 102(a)

Claims 1-3, 5, 6, 8, 10-15, 17-19, and 21-23 stand rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent 6,126,527 to Kao et al. (hereinafter "Kao").

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Kao describes a polishing apparatus which includes a polishing pad 130, referred to in Kao as a "polishing material". The pad rests upon a support structure 142 which includes a large cavity 140 that underlies the polishing pad 130. The cavity 140 of the support structure 142 is configured to contain a fluid, such as water, that may be used to control the temperature of the polishing process and to provide support for the polishing pad 130. *See*, col. 3, lines 53-59. An annular seal 144, 200, 500 positioned between the polishing pad 130 and the support structure 142 prevents fluid from escaping the cavity 140 and maintains a desired fluid pressure within the cavity 140. *See* FIGs. 1, 2, 5a, and 5b; Col. 4, lines 3-14 and 45-63; col. 6, lines 6-26. The portion 134 of the polishing pad 130 that is located over the cavity 140 and within the confines of the annular seal 144, 200, 500 is larger than the area of a wafer 120 to be polished with the

polishing pad 130 so as to “reduce edge effects caused by the seals and to provide a more uniform polishing process.” Col. 3, lines 41-44.

FIGs. 5a and 5b depict embodiments of the support structure 142 that include a souble dove-tailed groove 520 which holds an o-ring seal 500 in place around a fluid cavity 140 of the support structure 142 when the support structure 142 supports a compliant polishing material 130. Col. 6, lines 6-10. It is respectfully submitted that the o-ring seal 500 depicted in FIGs. 5a and 5b is not a subpad, which, as known in the art, is configured to cushion a polishing pad and a wafer being polished. *See, e.g.*, paragraph [0002] of the substitute specification filed in the above-referenced application on December 7, 2000. Instead, the o-ring seal 500 described in reference to FIGs. 5a and 5b of Kao is merely a sealing element which facilitates controlling of the fluid pressure within the fluid cavity 140 of a support structure 142 which is configured to be used with a polishing pad 130.

Accordingly, it is respectfully submitted that Kao does not expressly or inherently describe a subpad which is removably secured to a subpad support by way of a subpad retention element, as is recited in independent claim 1. It is, therefore, respectfully submitted that Kao does not anticipate each and every element of independent claim 1. Therefore, under 35 U.S.C. § 102(a) and (e), independent claim 1 is allowable over Kao.

Each of claims 2, 3, 5, 6, 8, and 10-15 is allowable, among other reasons, as depending either directly or indirectly from claim 1, which is allowable.

Claim 3 is additionally allowable since Kao neither expressly nor inherently describes a retention element which is configured to retain at least a portion of a periphery of the seal described therein.

Claim 5 is also allowable since Kao does not expressly or inherently describe a subpad support with a subpad retention element that mechanically engages a complementary structure on a *bottom surface* of a subpad. Instead, assuming *arguendo* that the o-ring seal 500 described in Kao is a subpad, substantially the entire o-ring seal 500, not just a *bottom surface* thereof, is engaged by the double dove-tailed groove 520.

Claim 6 is further allowable because Kao neither expressly nor inherently describes a subpad with a substantially rigid structure on a bottom surface thereof. Again, assuming *arguendo* that the o-ring seal 500 described in Kao were a subpad, Kao lacks any description of a substantially rigid structure secured to the o-ring seal 500.

Claim 8 depends from claim 6 and is additionally allowable since Kao does not expressly or inherently describe a substantially rigid structure which comprises a polymer on a subpad or, for that matter, on the o-ring seal 500 thereof.

Claim 10 also depends from claim 6 and is also allowable because Kao neither expressly nor inherently describes a subpad with a dense region or that the o-ring seal 500 thereof includes a dense region.

Independent claim 17 is allowable over Kao since Kao lacks any express or inherent description of a subpad support that comprises a subpad retention element. Rather, as described above, the support structure 142 of Kao is configured to support and retain a seal 144, 200, 500. As explained above, it is well known in the art that a seal of the type described in Kao is quite different from a subpad, as is recited in independent claim 17. As such, the support structure 142 described in Kao is not a "subpad support", as recited in independent claim 17. Nor does the double dove-tailed groove 520 thereof, which is configured to retain an o-ring seal 500, comprise a subpad retention element, as recited in independent claim 17.

As Kao does not expressly or inherently describe each and every element of independent claim 17, it is respectfully submitted that, under 35 U.S.C. § 102(a) and (e), independent claim 17 is allowable over Kao.

Claims 18, 19, and 21-23 are each allowable, among other reasons, as depending either directly or indirectly from claim 17, which is allowable.

Claim 19 is also allowable since Kao does not expressly or inherently describe a subpad support with a subpad retention element that mechanically engages a complementary structure on a *bottom surface* of a subpad. Instead, assuming *arguendo* that the o-ring seal 500 described in

Kao is a subpad, substantially the entire o-ring seal 500, not just a *bottom surface* thereof, is engaged by the double dove-tailed groove 520.

Claim 21 is further allowable because Kao lacks any express or inherent description of a subpad support which includes subpad retention element that comprises a clamp element.

In view of the foregoing, it is respectfully requested that the 35 U.S.C. § 102(a) rejections of claims 1-23 be withdrawn.

Allowable Subject Matter

The indication that claims 4, 7, 9, 16, and 20 is gratefully acknowledged. As independent claims 1 and 17 are believed to be allowable over Kao, no amendments to claims 4, 7, 9, 16, or 20 are being made at this time.

New Claims

New claims 40-54 have been added. It is respectfully submitted that none of these claims introduces new matter into the above-referenced application.

New claim 40 is an independent claim which recites an apparatus for polishing one or more layers of a semiconductor device structure. That apparatus includes, among other things, a subpad support with a substantially planar subpad supporting surface upon which a subpad is disposed, as well as a subpad retention element associated with the surface. It is respectfully submitted that Kao does not describe, teach, or suggest such a subpad support. Accordingly, it is respectfully submitted that new claim 40 is allowable over Kao.

New claims 41-48 depend either directly or indirectly from new claim 40 and recite subject matter which is similar to that recited in claims 4, 5, and 11-16, respectively.

New claim 49 is also an independent claim. New claim 49 is drawn to a subpad support that includes a substantially planar support surface and a subpad retention element associated with the support surface. The subpad retention element of new claim 49 is configured to retain a

subpad positioned on the support surface. Again, it is respectfully submitted that Kao does not describe, teach, or suggest a subpad support with this combination of features. Thus, it is respectfully submitted that new claim 49 is allowable over Kao.

Each of new claims 50-54 depends directly or indirectly from new claim 49. New claims 50-54 respectively recite subject matter which is similar to that recited in claims 18, 19, 22, 23, and 20.

For these reasons, the entry and allowance of new claims 40-54 is respectfully requested.

CONCLUSION

It is respectfully submitted that each of claims 1-23 and 40-54 is allowable. An early notice of the allowability of these claims and an indication that the above-referenced application has been passed for issuance are respectfully solicited. If any issues preventing the allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully Submitted,



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Enclosure: Version With Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please amend the claims as follows:

4. (Amended) The apparatus of claim 1, wherein said subpad retention element comprises negative pressure applicable to a [backing] bottom surface of said subpad through said subpad support.

5. (Amended) The apparatus of claim 1, wherein said subpad retention element mechanically engages a complementary structure on or adjacent to a [backing] bottom surface of said subpad.

6. (Amended) The apparatus of claim 1, further comprising a substantially rigid structure on a [backing] bottom surface of said subpad.

7. (Amended) The apparatus of claim 6, wherein said substantially rigid structure is secured to said [backing] bottom surface of said subpad.

10. (Amended) The apparatus of claim 6, wherein said substantially rigid structure comprises a dense region of said subpad at said [backing] bottom surface thereof.

13. (Amended) The apparatus of claim 1, wherein a [backing] bottom surface of said subpad is substantially free of adhesive material.

19. (Amended) The subpad support of claim 17, wherein said subpad retention element mechanically engages a corresponding feature on or adjacent to a [backing] bottom surface of a subpad to be assembled with the subpad support.

20. (Amended) The subpad support of claim 17, wherein said subpad retention element is configured to apply a negative pressure to a [backing] bottom surface of a subpad engaged by said subpad retention element.